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THE GENUS *ALVANIA* ON THE CANARY ISLANDS AND MADEIRA (MOLLUSCA: GASTROPODA) PART 1

R. G. MOOLENBEEK & H. J. HOENSELAAR

SUMMARY

Micromolluscs of the family Rissoidae and belonging to the genus *Alvania* s.l. from the Canary Islands and the Madeira archipelago are revised. For several species the type locality is restricted and lectotypes are designated for *Rissoa canariensis* d'Orbigny, 1839, *R. euchila* Watson, 1886, *R. aurantiaca* Watson, 1873, *R. leacocki* Watson, 1873, and *R. macandrewi* Manzoni, 1868. Two species (*Alvania guancho* n.sp. and *A. piersmai* n.sp.) are new to science.

INTRODUCTION

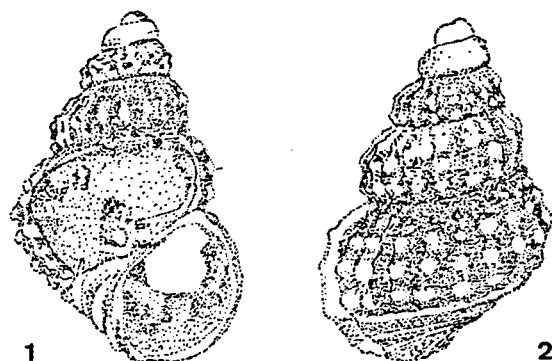
Most authors consider the marine molluscan fauna of the Canary Islands and the Madeira archipelago identical to that of the Mediterranean and East Atlantic warm - temperate waters. However, based on a study of the micro molluscs, we think that many species belonging to the family Rissoidae show minor differences with related species from the Mediterranean province and must be considered separate species (Moolenbeek & Faber, 1987 ; Verduin, 1984 Palazzi, 1988).

This paper will give information about the species of *Alvania* s.l. (vide Ponder, 1985), based on type specimens (if available) and on material recently collected.

The first author collected in 1983 on Madeira and Porto Santo, whereas additional material from these islands was kindly put at our disposal by Mr. J. Ver-

straeten (Wetteren, Belgium). In 1984, Moolenbeek collected material on Lanzarote (Canary Islands) as well and additional material was received from J. Verstraeten, G. Gulden, H. Menkhorst, E. van der Heijden, L.F. Dix, G. Dionis, J. van Beusekom (Tenerife), J.H. Stock (Tenerife, Lanzarote, Graciosa, Fuerteventura, La Palma, El Hierro, Gomera), H. Strack, W. & E. Ellis (Gran Canaria), T. Piersma (El Hierro, Fuerteventura), J. Punselie, J. van de Ven (Fuerteventura), H. Huneker (Lanzarote).

Type specimens and other material were received on loan from the Museo Municipal Funchal, Madeira (MMF), British Museum (Natural History), London (BMNH), Muséum national d'Histoire Naturelle, Paris (MNHN), Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels (KBIN), the Hebrew University, Jerusalem (HUJ), and the Forschungsinstitut Senckenberg, Frankfurt (SMF).



Figs. 1-2. *Alvania canariensis*, lectotype (BMNH 1854.9.28.74), Tenerife, Santa Cruz, length 1.85 mm. 1, apertural view; 2, dorsal view.

***Alvania canariensis* (d'Orbigny, 1839)**
(Figs. 1-2, 15-17)

Rissoa canariensis d'Orbigny, 1839: 78, pl. 6 figs 5-7;
Watson, 1873: 376-377, pl. 35 fig. 12.

Alvania (Alvania) scabra; Ponder, 1985: fig. 91 H.

Alvaniella mutabilis; Nordsieck & Talavera, 1979: 72, pl. 14 fig. 46.

Original description

"*Testâ oblonga-conicâ, solidâ, inperforatâ, albâ; spirâ elongatâ, acutâ; anfractibus quinis convexis; costis trinis antice transversim, ornatis, postice longitudinaliter, transversaliterque nodulosis; suturâ profundâ; aperturâ rotundâ; labro marginato, incrassato, laevigato.*

Dimensions. Longueur: 1 3/4 millimètre. Largeur: 3/4 millimètre.

Coquille oblongue, conique, assez solide, non ombiliquée; spire allongée, très-aiguë, composée de cinq tours très-convexes, dont le dernier est marqué en avant, de trois côtes transversales; sur le reste de la spire, correspondant aux parties à découverte dans l'encroûtement, sont des tubercles arrondis, formés par des côtes longitudinales et transversales qui se croisent à angle droit; de ces côtes, les longitudinales sont les plus saillantes; et, sur le milieu de chacune, est un tubercle plus gros que les autres. Sa couleur est blanche.

Après avoir comparé cette espèce au grand nombre de *Rissoa* de nos côtes que nous possédons, nous n'en avons trouvé aucune qui lui fût analogue; elle se rapproche un peu du *Rissoa buccinoïdes* de Morée, mais bien plus petite, plus aiguë; ses tours sont plus renflés, et ses côtes longitudinales ne se continuent point en avant".

Since the original description was based on one or at most a few shells, we will give some more information.

Additional description

Protoconch about 1 1/2 whorl (fig.16). Apex and first part of whorl with microsculpture of minute pustules, gradually forming 9-10 spirals. Spirals consist of rows of pustules with minute pustulation in the intervening areas (fig.17).

Teleoconch 3-3 1/2 whorls with spiral and axial ribs, the latter a little more pronounced than spirals. First pnw (=1 pnw) with 2 spirals, gradually a 3rd spiral appears above the others. Body whorl above aperture with 3 strong spirals (sometimes a less developed 4th above these), and 12-13 axial ribs.

Microsculpture of very fine spirals (fig. 16). Full-grown specimens with moderately strong varix. Peristome single.

Colour: Protoconch white, with black or brownish spot at the apex. Teleoconch from light to dark brown often with nodules lighter coloured and mucronate.

Type material

We have studied a type specimen from the BMNH (1854.9.28.74), labelled as holotype (figs. 1-2) with measurements 1.85 by 1.2 mm. However, we do not have evidence that it is identical to the shell figured by d'Orbigny. For that reason we designate the BMNH specimen as the lectotype of *Rissoa canariensis*.

Type locality

"Dans les sables de l'île de Ténériffe" (in sand on Tenerife).

Material studied

TENERIFE; Puerto de la Cruz (20 spms), leg. E. van der Heijden, VI.1986; Los Christianos (3 spms), leg. L.F.Dix, III.1984; Playa de las Americas (68 spms), leg. G.Gulden, IV.1981.

FUERTEVENTURA; Las Salinas (16 spms), Puerto de Lajas (3 spms), El Cotillo (112 spms), Puerto del Rosario (200 spms), all leg. T. Piersma, IV.1986; El Cotillo (34 spms), leg. J. Punselie, XII.1984.

GRAN CANARIA; Las Canteras (>200 spms), leg. H. Strack, III.1985; Mas Palomas (5 spms), leg. W. & A.Ellis, IV.1987.

EL HIERRO; Las Lapillas (6 spms), leg. T.Piersma, 1.IV.1986

LANZAROTE; La Santa (30 spms), Matagorda beach (>200 spms), Punta de Mujeres (82 spms), Las Coloradas (1 spm), Playa del Reducto (190 spms), Punta Pechiguera (17 spms), Playa de Montaña Roja (40 spms), Puerto del

Carmen (10 spms), Orzola (9 spms), Las Crusitas (46 spms), Playa del Pozo (> 200 spms), all leg. R.G. Moolenbeek & W. C.M. van der Hijden, VIII.1984.

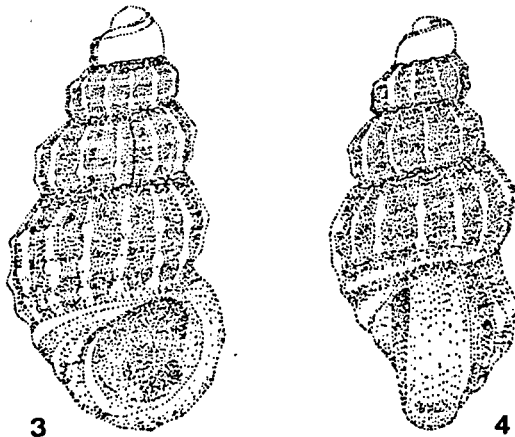
LA PALMA; Punta las Salineras (120 spms), leg. J.H. Stock, IV.1987

MADEIRA, Bay of Funchal, 3 m (2 spms), 20 m (130 spms), 40 m (200 spms), off Cancela (10 spms), off Lido (12 spms), Ribeira Brava (1 spm), all leg. R.G.Moolenbeek & W.C.M. van der Hijden, VII.1983; Camara dos Lobos (3 spms), leg. J. Verstraeten, 25.IX.1986; Madeira (16 spms), ex Tomlin (HUJ no. 3797A); Madeira (3 spms), (MMF).

PORTO SANTO (66 spms, as *Alvaniella mutabilis* Schwartz, 1869), coll. F.Nordsieck (SMF).

Remarks

Alvania canariensis resembles the Mediterranean *A. scabra* (Phillippi, 1844). However, based on specimens from Spain, Getarès, the latter are generally larger and more slender. Also they lack the black tip on the apex and the strong varix.



Figs. 3-4. *Alvania guancha* n.sp., holotype (ZMA Moll. 3.89.001), Tenerife, Playa de las Americas, length 1.95 mm. 3, apertural view; 4, lateral view.

Alvania guancha n.sp. (Figs. 3-4, 18-20)

Merelina caribaea (d'Orbigny, 1853); Nordsieck & Talavera, 1979: 68, pl. 13 fig. 33.

Type material

Holotype (figs.3-4) in ZMA (Moll. 3.89.001) and 57 paratypes (ZMA Moll. 3.89.002, HUJ, coll. Hoenselaar, coll. Rolán, coll. Gulden), 2 paratypes, coll. Hoenselaar, leg. J. van Beusekom, II.1985.

Type locality

Canary Islands, TENERIFE, Playa de las Americas (18 .IV.1984, leg. G.Gulden).

Other material studied

Canary Islands, TENERIFE, La Caleta (9 spms), leg. J.Verstraeten, 1984; coll. H.Menkhorst (4 ex.),1984; Las Caletas (2 spms), coll. H.Menkhorst, 1984; El Caletín (2 spms), leg. J.H. Stock, 27.X.1988; Teneriffa (7 spms as *Merelina caribaea*), coll. F.Nordsieck (SMF).

FUERTEVENTURA, El Cotillo (5 spms), leg.J.Punselie, 31.XII.1984; same locality (6 spms), leg. T.Piersma, 12.IV.1986; S.of Puerto del Rosario (1 spm), leg. T.Piersma, 3.IV.1986.

GRAN CANARIA, Las Canteras (19 spms), leg. H. Strack, III.1985.

EL HIERRO, Las Lapillas (3 spms), leg. T.Piersma, 1.IV.1986.

LANZAROTE, Las Crusitas (5 spms), La Santa (2 spms), Playa del Pozo (4 spms), all leg. R.G.Moolenbeek & W.C.M. van der Hijden, VIII.1984.

LA PALMA, Punta las Salineras (33 spms), leg. J.H. Stock, 8.IV.1987.

Description of holotype

Shell length 1.95 mm, width 1.0 mm (figs 3-4).

Protoconch paucispiral, of about one convex whorl, with strong spiral carina on upper part of whorl. Apex slightly inrolled. Background sculpture of minute pustules, irregularly arranged. Suture deep (fig. 19).

Teloconch of 3 1/2 convex whorls (fig.18), strongly sculptured with axial ribs and less prominent spiral cords, their intersections being nodulose.

First post nuclear whorl with 2 spiral ridges, crossed by 14 axial ribs. Microsculpture of many (about 80) fine spiral riblets and spiral grooves. Grooves as wide or a little wider than the ridges (fig.20).

Penultimate whorl with 2 strong spiral ridges and a small one just below suture, crossed by about 15 axial ribs. Microsculpture as on 1st pnw.

Body whorl above aperture with 2 strong spiral ridges and one ridge just below the suture, giving it an undulating appearance. These ridges crossed by 15 axial ribs. Below these spirals another 4 spirals of which only the adapical one with slight indication of axials.

Aperture ovate, entire, with strong varix on outer lip. Peristome simple, with same microsculpture as whorls.

Colour: Protoconch vitreous. Teleoconch light brownish except area between the 2 prominent spiral ridges which is white. Towards the varix the brown bands become darker and end in a darker spot. Varix and peristome white except lower part where the dark spot crosses it. Umbilical area brownish. Inside aperture white, with the dark spots on outer lip shining through.

Etymology

Named after the GUANCHES, the original inhabitants from the Canary Islands, who fought, in the 14th and 15th centuries, against the Conquistadores, but were destroyed by the arms and the diseases of the Spanish.

REMARKS

Alvania guancha n.sp. differs from *A. subareolata* Monterosato, 1869 in being smaller and more slender, and having the axial and spiral cords less pronounced. The axial ribs are more numerous (16, against 10-11 in *A. subareolata*), and the whorls are less convex. A prominent carina is present on the protoconch of *A. guancha* n.sp., but lacks in *A. subareolata*, whereas this species has some weakly developed spirals with more pronounced pustules. The latter also has a more opisthocline aperture seen from aside. For details and figures of *A. subareolata* we refer to Melone & Sabelli (1980).

Alvania euchila (Watson, 1886)

(Figs. 5-6, 21-23)

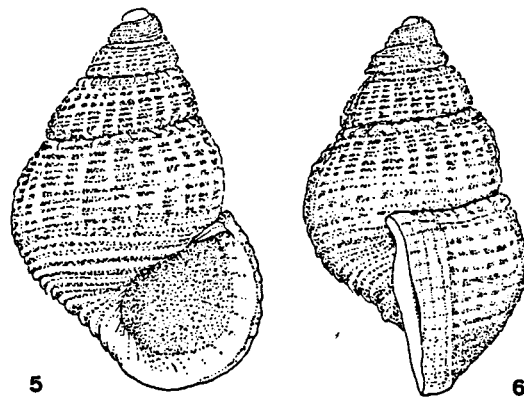
Rissoa novarensis Watson, 1873: 377-378, pl. 35 fig. 13; Weinkauff, 1885: 147, pl. 18 fig. 4 (non *R. novarensis* Von Frauenfeldt, 1867).

Rissoa euchila nom. nov. Watson, 1886: 602.

Original description

"Shell conic-oval, not rising in steps, somewhat solid, glossy, brilliant, subopalescent. Sculpture. Longitudinal ribs, from 20 to 30, narrow, flexuous, about as wide as their intervals, diminishing in number on upper whorls and dying out on base. Labial rib thick and strong. Spiral threads on body-whorl about 14; they are slightly broader below than above periphery, where they are sometimes evanescent; they are about twice as broad as their interstices. Six of these usually appear on the penultimate

whorl, but they become too indeterminate for counting. They are always most distinct in the rib-intervals; on the rib-crests they tend to evanesce. Besides these, the whole surface is covered with faint longitudinal lines; and on the upper whorls especially exceedingly fine microscopic spiral lines can sometimes be traced. On the embryonic 1 1/2 whorl about twelve closely and finely stippled spiral lines are visible. Colour yellowish white, opalescent on ribs, with three broad irregular and interrupted bands or series of spots of a clear yellowish brown, darkest near the mouth. The first is below the suture, the second at the periphery, the third on base. The first and second tend to coalesce behind the labial rib, at which point the third series also expands, crossing the rib and staining the lower outer corner of the mouth, the whole outer edge of which has a tinge of brown. The belly is yellow, and the whole pillar and labial rib an opaque white. The tip of the embryonic shell is a rich deep chestnutbrown. Spire a short broad cone, terminating in a blunt flattened apex in the centre of which the brown tip swells into sight. Whorls 4 to 5, very much flattened so as to form a continuous straight slope from tip to periphery, of rather rapid increase. Suture straight, shallow, narrow, but very distinct. Mouth oval, very little pointed above, contracted on its outer upperside, but expanded on base. Outer lip thickened by a heavy white rib, somewhat incurved above, and there bevelled off from the outside to a sharp edge, whereas on the base the bevelling-off is from the inside entirely. This labial rib lies a little way back from the edge; and beyond it the sharp mouth-edge is only scored by fine longitudinal lines. Inner lip is barely detached from the pillar, so as to leave a slight chink; it is continued pretty thickly across the belly, and meets the outer lip in a rounded and somewhat padded angle".



Figs. 5-6. *Alvania euchila*, lectotype of *Rissoa novarensis* Watson (BMNH 1875.5.27.14), Madeira, length 2.15 mm. 5, apertural view; 6, lateral view.

Additional description

To this excellent description we have one addition. The spirals on the protoconch consist of irregularly grouped pustules (fig.22).

Type material

Four syntypes in BMNH (1875.5.27.14), of which we select the specimen with length 2.15 mm, width 1.5 mm as lectotype (figs. 5-6). The other three syntypes become paralectotypes. Another paralectotype ex coll. Becker (BMNH 198320). Possible paralectotypes (12 spms) were studied from the Norman collection (BMNH 22188-96), and two from the Moniz collection (BMNH 1966198). From the HUU (36114, ex coll. Blok) we studied 9 paralectotypes. All these paralectotypes came from Madeira, ex collection Watson.

Type locality

In the original description of *R. novarensis*, Watson mentioned several localities on Madeira. We restrict the type locality to "Funchal Bay".

Other material studied

MADEIRA (2 spms), coll. MMF; Bay of Funchal, 3-5 m (3 spms), 15 m (5 spms), 20 m (34 spms), 40 m (13 spms); Ribeira Brava, 2-4 m (1 spms), all leg. R.G. Moolenbeek & W.C.M. van der Hijden, VIII.1983.

Remarks

The name *Rissoa novarensis* was introduced by Von Frauentfeldt (1867) for an Australian species. Therefore Watson (1886) renamed his taxon.

The species shows resemblance to the east Atlantic *Alvania porcupinae* Gofas & Warén, 1982 and to *A. zylensis* Gofas & Warén, 1982. However, both have a different sculpture on the protoconch (see Gofas & Warén, 1982 for good illustrations of protoconchs and complete shells).

As far as we know this species is endemic to the Madeira archipelago.

Alvania cancellata (Da Costa, 1778)

(Figs. 24-26)

Turbo cancellatus Da Costa, 1778: 104, pl. 8 figs. 6,9.

Rissoa cancellata; Watson, 1873: 367, pl. 34 fig. 2.

Alvania cancellata; Sabelli & Sabelli Scanabissi, 1976: 203, pl.1 fig.2; Fretter & Graham, 1978: 177-180 figs. 152-153; Thiriot-Quievreux, 1980: 68 figs. 3 i, j, k; Ponder, 1985: 139 figs 90 A-C.

Acinopsis cancellina; Nordsieck & Talavera, 1979: 70, pl. 13 fig.39.

Acinopsis cancellata; Nordsieck & Talavera, 1979: 70-71, pl.13 fig.40.

Original description

"*Turbo minimus albus cancellatim vel decussatim striatus. Cancellatus. Buccinum, parvum, integrum, ore perpendiculari, minimum, striis minutissimis cancellatum, subalbidum. Gualt. l. Coch. tab. 44. fig. XX.*

Cimex. *Turbo testa oblonga-ovata, striis decussatis: punctis eminentibus. Lin.S.N. p, 1233. No. 609.*

This shell is very small, hardly double, the size of a caraway seed, of a taper shape, totally milk white, rather thick, and with no gloss. It is wrought all over with a deep latticed work, formed by thick ridges, which run spiral and longitudinal, so as to cross or decussate each other.

The mouth is round, and it has no umbilicus. The spires are four. They gradually decrease to a bluntish tip, and are separated by a strong furrow. I have received it from the island of Guernsey, and from Cornwall. It is also a native of the Mediterranean, and of the coast of Senegal in Africa".

Additional description

Shells from the Canary Islands and Madeira are strongly cancellated and of a yellowish-white to fawn colour. Length ranges from 2.9 to 3.7 mm, width from 1.9 to 2.5 mm.

Protoconch (fig.25) identical to that figured by Thiriot-Quievreux (1980: fig. 3 i,j,k) and Ponder (1985: fig. 90 B).

Teleoconch distinctly stepped in outline, with 4-5 whorls (fig.24). Body whorl with 2-3 rows of spirals above aperture and 6-7 in total. Other whorls with 2 spirals, developed directly after the protoconch, and 3rd spiral formed between 1st and 2nd row on ultimate or penultimate whorl. Number of axial ribs varies from 17-20 on body whorl, and when crossing spirals they produce sharp, slightly rounded knobs. Heavy callosity on columella and well developed varix at end of outer lip.

Type material

We do not know of the existence of any type material of *A. cancellata*.

According to Dance (1966) the Da Costa collection was acquired by E. Donovan. Some types of his collection are in the British Museum and some in the Glasgow University Museum.

Type locality

"Guernsey, and from Cornwall".

Material studied

Apart from European Atlantic and Mediterranean material we studied:

Canary Islands, FUERTEVENTURA; El Cotillo (11 spms), leg. J. Punselie, XII.1984, (2 spec), leg. T. Piersma, IV.1986.

GRAN CANARIA; Las Canteras (5 spms), leg. H. Strack, III.1985.

LANZAROTE; Playa Mujeres (1 spm); Playa de Montaña Roja (4 spms); Puerto del Carmen (12 spms); Playa del Pozo (14 spms); Matagorda beach (4 spms); La Santa (>100 spms), all leg. R.G. Moolenbeek & W.C. M. van der Hijden, VIII.1984.

MADEIRA; Bay of Funchal, 3-5 m (26 spms), 15-20 m (276 spms), 40 m (70 spms); off Cancela (99 spms); off Lido (>200 spms); Ponta dos Reis Magos (4 spms), Ribeira Brava (45 spms), all leg. R.G. Moolenbeek & W.C.M. van der Hijden, VIII.1983; Camara dos Lobos (19 spms), leg. J. Verstraeten, 25.IX.1986; Madeira (4 spms), ex coll. Watson (HUJ).

PORTO SANTO (33 spms, as *Acinopsis cancellina*), coll. Nordsieck (SMF); Porto Santo (128 spms), coll. Nordsieck (SMF).

Remarks

This species, with its planktotrophic larval development, has a large distribution range, without clinal variation on the Canary Islands and/or Madeira.

We agree with Weinkauff (1885: 115) that the original description of *Turbo cancellatus* Da Costa, 1778 is insufficient and could be either "*Rissoa calathus*, *R. reticulata* oder *R. cimicoides*". For this reason Weinkauff preferred the name *Rissoa (Alvania) crenulata* Michaud, 1830 for this species. Only a study of the type material can solve this nomenclatorial problem.

Alvania leacocki (Watson, 1873)

(Figs. 7-8, 27-29)

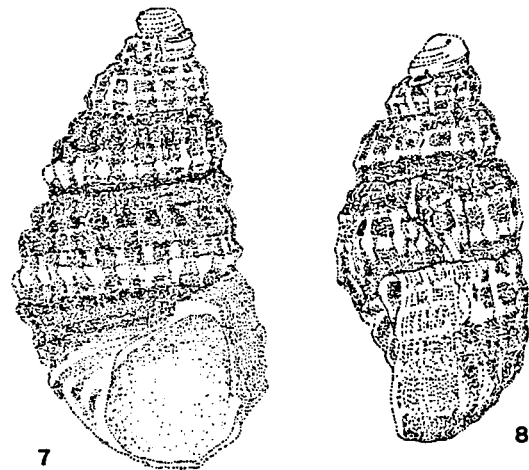
Rissoa leacocki Watson, 1873: 365-367, pl. 34 fig. 1; Weinkauff, 1885: 157, pl. 19 fig. 8.

Description

Watson's original description is excellent (2 pages). We will give the most discriminating characters. Shell very solid, straight conic, squarely tuberculate, somewhat transparent. Protoconch 1 1/4 whorls, with 5-6 sharp spirals, interstices about 5 times as broad as spirals (fig. 28).

Teleoconch with straight conical outline, with deep sutures (fig. 27). First pnw with 2 spirals, a 3rd appearing gradually above these 2 on 2nd pnw. Penulti-

mate whorl with 3 spirals and bodywhorl with 11 spirals of which 3 above aperture. On bodywhorl these spirals crossed by 16-18 axial ribs, on crossings weakly to strongly nodulose. Peristome entire and duplicated. Inside outer lip in fullgrown specimens with 5-6 teeth.



Figs. 7-8. *Alvania leacocki*. 7, lectotype (BMNH 1875.5.27.3), Madeira, length 2.6 mm, apertural view; 8, Lateral view of doubtful syntype of *Turbona calathus manzonii* Nordsieck, 1972 (SMF), Porto Santo, length 2.44 mm.

Colour (after Watson, 1873): "yellowish or faintly brownish white, with two broad spiral bands of colour, the higher and broader extending from the suture, and including the two upper spiral threads, the lower including the two spiral threads below the periphery; between these two bands of colour one spiral thread with its intersectional knobs stands strongly out in the yellowish-white colour of the shell. On the penultimate whorl, the upper edge of the lower band of colour just shows in the suture; on the superior whorls the two upper spiral threads are coloured, the lower one is pale. The first two whorls [=protoconch] are uncoloured: On the labial rib, the end of each spiral thread is coloured: when fresh, this colour is an exquisite brilliant crimson; but it soon fades to a ruddy brown. The whole pillar and the interior of outer lip are opaque white".

Type material

Four syntypes (BMNH 1875.5.27.3) of which we designate as lectotype the specimen measuring 2.6 mm

in length, and 1.45 mm in width (fig. 7). The other 3 specimens become paralectotypes. Seven other paralectotypes (BMNH 1983.15), leg. Watson, ex coll. Becker; 4 possible paralectotypes (BMNH 1966.203), leg. Watson, ex coll. J.M.Moniz, 8 possible paralectotypes (BMNH 1911.10.26.23302-8 ;1 specimen is *Manzonina crispa*), leg. Watson. All type material with locality Madeira.

Type locality

"Gorgulho, shore; Santa Cruz, shore; Selvagens, shore; Ponta de São Lourenço, shore to 45 fathoms; Piedade (Caniçal), 15 to 35 fathoms; Funchal Bay, up to 50 fathoms; Porto Santo, up to 50 fathoms".

We herewith restrict the type locality to Madeira, Funchal Bay.

Other material studied

MADEIRA, Bay of Funchal (4 spms), 15 m(1 spm) , 40 m (7 spms), off Lido Funchal (18 spms), all R.G. Moolenbeek & W.C.M. van der Hijden, VIII.1983; Camara dos Lobos (1 spm), leg. J. Verstraeten, IX.1986; Madeira (4 spms), coll.Dautzenberg (KBIN).

PORTO SANTO (2 spms as *Alvania canariensis*), coll. F.Nordsieck (SMF); (5 spms as syntypes of *Turbona calathus manzonii* Nordsieck, 1972) coll. F.Nordsieck (SMF).

Canary Islands: FUERTEVENTURA, El Cofillo (40 spms), leg. J. Punselie, XII.1984; Puerto de Lajas (4 spms), leg. T.Piersma, IV.1986.

GRAN CANARIA (11 spms), ex coll. Watson (HUJ, ex coll.Blok).

LANZAROTE, Playa del Pozo (3 spms), Las Crusitas (4 spms), Punta Mujeres (182 spms), Playa Montaña Roja (3 spms), Punta Pechiguera (29 spms), La Santa (>1000 spms), Orzola (140 spms), all leg. R.G.Moolenbeek & W.C.M. van der Hijden, VIII.1984.

TENERIFE, Playa de las Americas (62 spms), leg. H.Huneker, XII.1981.

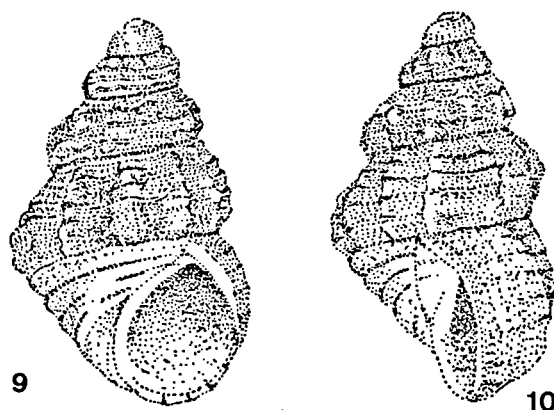
Remarks

The colour pattern of the shells from the Canary Islands is more variable. Some have the brown bands (threads), others have one or more narrow brown spiral bands or are uniform light yellow.

We only have one correction concerning the original description of Watson. He mentioned that this species has no teeth inside the aperture. However, full-grown specimens do have them, although sometimes barely visible. In his 1886 paper, Watson (p. 594) mentioned the high variability of this species and that it might be identical with the species called *Rissoa*

calathus vide Manzoni (1868). Probably, Manzoni was confused by the bad condition of the specimens.

Nordsieck (1972) described *Turbona calathus manzonii* based on material from "Kanaren und Madeira". In SMF, there are 5 syntypes with the locality Porto Santo (part of the Madeira archipelago). However, this material does not correspond with Nordsieck's figure (1972, pl.R7 fig.9) and is identified by us as *Alvania leacocki* (Watson). We herewith figure one of these specimens (fig.8). May be the labels were once mixed?



Figs. 9-10. *Alvania piersmai* n.sp., holotype (ZMA Moll. 3.89.003), El Hierro, Las Lapillas, length 1.8 mm; 9, apertural view; 10, lateral view.

Alvania piersmai n.sp. (Figs. 9-10, 30-32)

Alvaniella macandrewi; Nordsieck & Talavera, 1979: pl. 14 fig. 47.

Alvaniella macandrewi spreta; Nordsieck & Talavera, 1979: pl. 14, fig. 48.

Type material

Holotype (figs. 9-10) in ZMA (Moll. 3.89.003), and 23 paratypes (ZMA Moll. 3.89.004, HUJ, coll. Hoenseelaar, and coll. Rolán).

Type locality

Canary Islands, EL HIERRO, Las Lapillas, Tocarón, tidal pool (leg. T.Piersma, 1.IV.1986).

Other material studied

Canary Island, EL HIERRO (5 spms, as *Alvaniella macandrewi*) coll. F.Nordsieck (SMF), (10 spms, as *Alvaniella macandrewi spreta*) coll. F.Nordsieck (SMF).

Description holotype

Shell length 1.8 mm, width 1.1 mm (figs. 9-10).

Protoconch paucispiral, about 1 1/2 convex whorls. Apex smooth, gradually 7-8 weak spirals are formed (fig.31).

Teleoconch of 3 1/2 convex whorls, sculptured with strong axial ribs and less prominent spiral cords. Intersections nodulose, especially on and close to periphery. First pnw with 2 spiral cords and 11 axial ribs.

Microsculpture of many fine spiral riblets (fig.32). Penultimate whorl with 2 later 3 spirals and 11 axial ribs. Body whorls on ventral side with 7 spiral ridges above aperture and 4 spirals on lower part, which are crossed by 10 axial ribs and the strong varix. Aperture ovate and entire; peristome simple and thin.

Colour: Protoconch vitreous. Teleoconch transparent, only 1st pnw brownish. Spiral ridges brown, only on crossings with axials they are lighter brown or even colourless. Some axial ribs on penultimate and bodywhorl completely colourless. On varix 10 brown spirals end. Umbilical area colourless (white). Inside aperture with brown spirals shining through.

Etymology

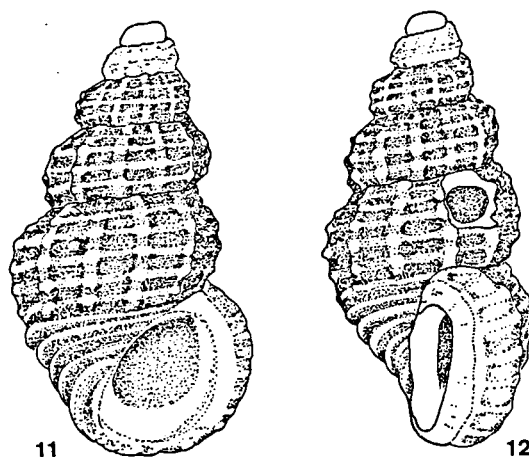
Named after Drs T.Piersma, who kindly collected mollusc samples during ornithological studies in Mauritania, Tunisia, Morocco and the Canary Islands.

Remarks

This species was already figured by Nordsieck & Talavera (1979: pl. 14 figs 47-48) with the names "*Alvaniella macandrewi*" and "*A. macandrewi spreta*". However, after studying the type of *Rissoa macandrewi* Manzoni, 1868, we are convinced that the latter is distinct. Moolenbeek & Faber (1987) concluded that *Rissoa macandrewi* var. *spreta* Watson, 1873 must be considered a *Manzonia* species, endemic to the Madeira archipelago.

The brown spiral lines in *A. piersmai* n.sp. look identical to those on *A. lineata* (Risso, 1826), but the latter species is nearly twice as large, has straighter

sides and teeth inside the outer lip. *A. aspera* (Philippi, 1844) looks like a giant *A. piersmai* (twice as large) but differs in having the brown spiral lines punctated.



Figs. 11-12. *Alvania macandrewi*, lectotype (MNH), Madeira, length 2.5 mm; 11, apertural view; 12, lateral view.

Alvania macandrewi (Manzoni, 1868)

(Figs. 11-12, 33-35)

Rissoa Macandrewi Manzoni, 1868: 164-165; Manzoni, 1868: 237-238, pl. 10 fig. 1; Watson, 1873: 372-373, pl. 34 fig. 8; Weinkauff, 1885: 159-160, pl. 19 figs. 13-15; Watson, 1898: 310.

Alvania (Alvania) macandrewi; Ponder, 1985: 38, 41, pl.89 figs A-D, pl. 91 fig. 1.

Original description

"T. solida, ovato-oblonga, spira conico-obtusa, concolore fulvo-castanea.-Anfractibus 6, regulariter convexis, suturis mediocriter profundis discretis; apicalibus laevibus, depresso involutis, reliquis elegantissime, spiralliter funiculis exilissimis, plicisque longitudinalibus instructis; in anfractu ultimo plicis 10 ad 12, basin versus evanidis; funiculis 10 (plicis interstitiisque transcurrentibus) undulatis, ad basin magis conspicuis et crebrioribus, callositatem (una cum 4 vel 5 tenuioribus in interstitiis medianis superadditis) excurrentibus.- Apertura subovata, mediocri, albicante; labro solido, extus valde calloso, intus laevi, margine interposito patulo, infra valde producto, arcuato; columella simplici, valida, arcuata; peristomate continuo, ad columellam et ad junctionem reflexo, ad labrum et ad basin erecto, fissuram tenuissimam linquente.- Long. 2 1/2, lat. 1 1/2 mill."

Additional description

Shell conic-oval, whorls convex, solid, and glossy.

Protoconch a little more than one whorl with 6-7 fine spiral lines, intervening areas with irregularly arranged minute pustules (fig. 34).

Teleoconch 3 1/2 whorls with spiral and heavy axial ribs. First pnw with 3 spirals and 13-15 axial ribs. Second pnw with 3-4 spirals and 11-13 axial ribs. Body whorls 12-14 spirals, of which 5-6 above aperture and crossed by 11-12 axial ribs. Spiral ribs with extremely minute rows of punctations, microsculpture between 2 spirals consisting of 14-16 minute spiral lines. At large magnification these minute spiral lines consist of rows of pustules (fig. 35).

Full-grown specimens with a strong white varix. Peristome simple.

Colour. Brownish orange except the vitreous protoconch and the white apertural varix and umbilical area.

Type material

There are 2 syntypes (measurements 2.5 by 1.43 mm and 2.4 by 1.27 mm) deposited in the MNHN, Paris. The specimen of 2.5 mm by 1.43 mm is here-with designated as lectotype of *Rissoa macandrewi* Manzoni, 1868 (figs.11-12).

Type locality

"In insulis Canariis"[Canary Islands]. On the original label is written "Madère". It is our opinion that this species is endemic to the Madeira Archipelago. Probably, Manzoni made a mistake or the material was mixed by Mac Andrew. Watson (1898) did not mention the Canary Islands either in his fauna list.

Other material studied

MADEIRA, Bay of Funchal (>200 spms), 35-40 m, (2 spms), 15 m, leg. R.G.Moolenbeek & W.C.M. van der Hijden, VIII.1983; Madeira (14 spms), ex coll. Norman, coll. Dautzenberg (KBIN), Madeira (4 spms), coll. Dautzenberg (KBIN).

Remarks

Alvania macandrewi is a species living in the lower infra-littoral zone (found by us between 35-40 m) and possibly also deeper.

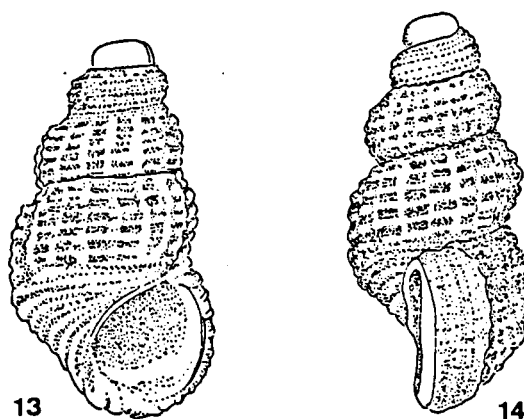
Watson (1873:372-373) already discussed Manzoni's poor figure and concluded that "on the whole, [it] fairly caught the general character of this shell". We

agree, that especially Manzoni's shell is drawn too straight in outline instead of showing the convex whorls.

Ponder (1985) stated that this species occurs on Madeira and the Canary Islands, but only studied one sample in BMNH from Madeira. We have doubts about its occurrence on the Canary Islands and suppose that Ponder copied it from Nordsieck.

Nordsieck (1972: 176) considered this species to belong to *Manzonia* and re-allocated it into a new subgenus, *Andrewiella*, which was considered a junior synonym of *Alvania* s.s. by Ponder (1985).

Nordsieck & Talavera (1979) misinterpreted the identity of *A. macandrewi* as already discussed by us in the remarks under *A. piersmai* n.sp.



Figs. 13-14. *Alvania aurantiaca*. Madeira; 13, paralectotype (BMNH 1875.5.27.5/2), length 1.95 mm, apertural view; 14, lectotype (BMNH 1875.5.27.5/1), length 2.05 mm, lateral view.

Alvania aurantiaca (Watson, 1873)

(Figs.13-14, 36-38)

Rissoa aurantiaca Watson, 1873: 367-368, pl. 34 fig.4.

Alvania gomezi Rolán, 1987: 9-10, fig. 1.

Original description

"Shell oblong, thick, not transparent, a little glossy, tubercled, rising in steps. Sculpture, longitudinal ribs, on body-whorl 18 to 20, gently rounded, disappearing on base; diminishing in number upwards on the whorls, and absent on the embryonic whorl; each is about twice as broad as the interval between them. Spiral threads 12 to 13, raised, rounded, shining; those on upper part of body-whorl are thrown out by the ribs into sharp points; they are generally pretty equally parted by spirally scratched interstices a little

broader than themselves; on the base they are sometimes closer-set, and sometimes are followed by a kind of miniature of themselves occupying half the interstice. The spiral scratchings of the interstices are extremely minute; and though more distinct than in *R. moniziana*, they do not interfere with the gloss of the surface as they do in *R. crispa*; about six go to each interstice. There is a broad, thick, white labial rib, which is strongly scored across by the spiral threads; and between these the interstitial scratches are plainly shown; but all these disappear just short of the mouth, which is edged by a thin and narrow border in advance of the labial rib; this border is well scored longitudinally. Colour orange (whence the name), with a slight dash of brown, in some cases paler, in others darker, but with little variety, and quite uniform in each specimen, except that sometimes, though rarely, the first whorl has a shade more of brown. The labial rib is whiter than the rest of the shell. Spire long, very little contracted upwards, rising but slightly in steps, ending in a depressed round apex, which is always higher on the side where the extreme embryonic tip stands up. Whorls 4 to 5, fully rounded, of regular increase. Suture deep, little oblique. Mouth very round, obtusely pointed above and encroached on by the belly; not open, except a little in front and on the pillar. Outer lip much thickened by the labial rib, but on its extreme edge sharp and thin, slightly expanding below. Its exterior profile, as the shell lies on its back, is formed by the labial rib bearing as knobs the ends of the spiral threads. Inner lip consists of the projecting edge of the outer lip, which sweeps continuously round; on the pillar it is a little reflected, and has there a sharp but little-projecting edge, with an umbilical chink behind it; this chink is generally small and narrow, but is sometimes open and trough-like. The callus which carries the pillar-lip across the belly is thin and closely united to the body; at its junction with the outer lip it seems always, in well-grown specimens, to project a little way out from the body to meet that lip".

Additional description

To this excellent description we only have an addition concerning the microsculpture of the protoconch (fig. 37). There are 5-6 spirals with irregularly arranged minute tubercles in between.

Type material

In the BMNH 4 syntypes (1875.5.27.5), of which we select the specimen measuring length 2.05 mm in length, and 1.10 mm in width as lectotype of *Rissoa aurantiaca* Watson, 1873 (fig.14). The other 3 specimens become paralectotypes. Four paralectotypes ex coll. Becker (BMNH 198316), 23 possible paralectotypes ex coll. Norman (BMNH 1911.10.26.22093-22112), and 3 possible paralectotypes ex coll. Moniz (BMNH 1966202), 20 paralectotypes (HUU 36094, ex

coll. Blok), all Madeira, ex coll. Watson.

Type locality

"Piedade (Canical), 15 to 36 fathoms; Ponta de S. Lourenço, 25 to 45 fathoms; Funchal Bay, up to 50 fathoms; Porto Santo, up to 50 fathoms". We herewith restrict the type locality to "Funchal Bay".

Other material studied

MADEIRA, Bay of Funchal(2 spms), 40 m, leg. R.G.Moolenbeek & W.C.M. van der Hijden, VIII.1983.

Remarks

In the original description, Watson (1873: 367) erroneously referred to his figure 3 instead of to figure 4. Later authors copied the initial mistake, although he corrected the error (Watson, 1886: 598). But Watson made the confusion complete in his publication of 1898, where again he referred to the wrong figure 3. Also Weinkauff (1885: 145-146, pl. 18 fig.1) did not compare the original description with the figure. He made a new description, gave a wrong locality and figure, all based on the shell figured by Watson in figure 3. The same interpretation was copied by Nordsieck (1972, pl. 6 fig.2) and Nordsieck & Talavera (1979, pl.13 fig. 30). In fact those authors figured shells which were later described by Moolenbeek & Faber (1987) as *Manzonia boogi* and *Manzonia boogi lanzarottii*.

Rolán (1987) incorrectly created the new name *Alvania gomezi* for *Rissoa aurantiaca* Watson (cf. Moolenbeek, 1987).

This species is very close to some forms of *A. macandrewi*. However, without anatomical research, we consider them separate species.

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Thanks are due to all collectors, who kindly loaned or donated their material for study (see chapters **new material studied**). Kathy Way (BMNH), R.Janssen (SMF), Philippe Bouchet (MNHN), F. Biscoito (MMF), Henk Mienis (HUU), J. van Goethem and A. Lievrouw (KBIN) allowed us to study (type)material under their care.

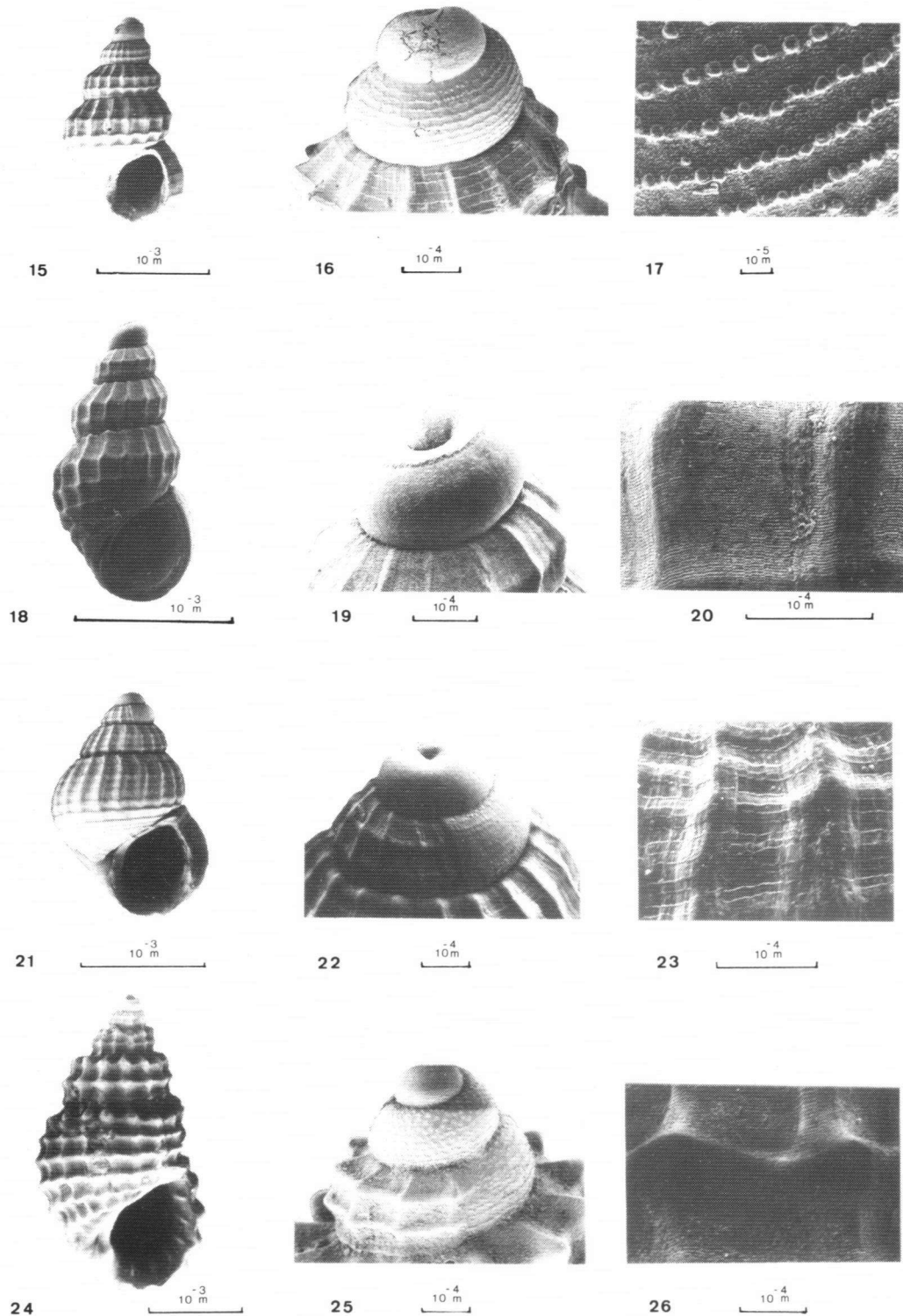
Due to the cooperation with Drs F. Biscoito and G.E. Maul (MMF) we could dredge (with staff mem-

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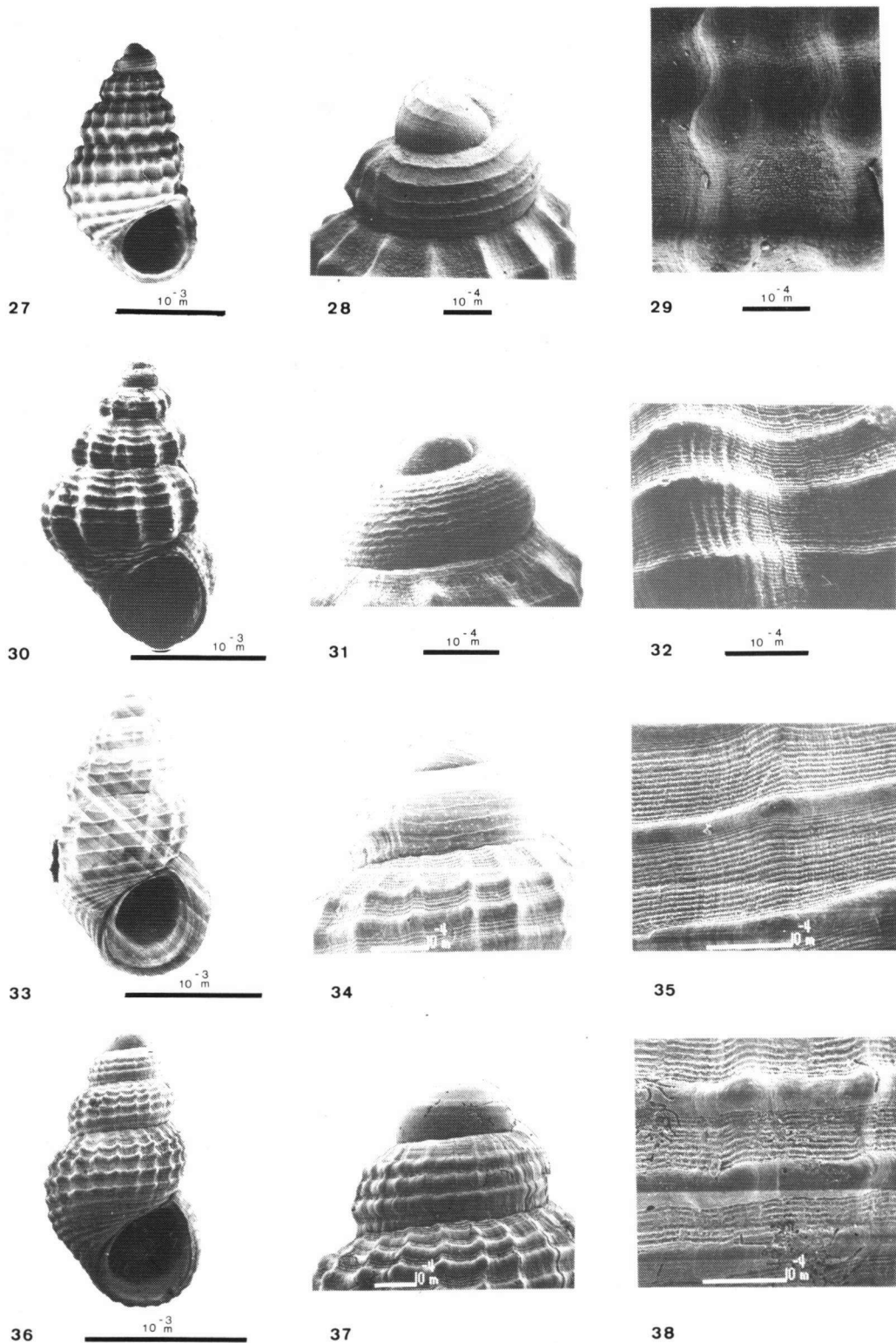


Figs. 15-17. *Alvania canariensis*, Madeira, Bay of Funchal, 1983; 15, apertural view; 16, protoconch; 17, microsculpture protoconch.

Figs. 18-20. *Alvania guancha* n.sp., paratype (ZMA Moll. 3.89.002/1), Tenerife, Playa de las Americas; 18, apertural view; 19, protoconch; 20, microsculpture bodywhorl.

Figs. 21-23. *Alvania euchila*, Madeira, Bay of Funchal, 1983; 21, apertural view; 22, protoconch; 23, microsculpture bodywhorl.

Figs. 24-26. *Alvania cancellata*, Madeira, off Cancela, 1983; 24, apertural view; 25, protoconch; 26, microsculpture bodywhorl.



Figs. 27-29. *Alvania leacocki*, Madeira, Bay of Funchal, 1983; 27, apertural view; 28, protoconch; 29, microsculpture body-whorl.
 Figs. 30-32. *Alvania piersmai* n.sp., paratypes (ZMA Moll. 3.89.004/1-2), El Hierro, Las Lapillas, 1986; 30, apertural view; 31, protoconch; 32, microsculpture bodywhorl.
 Figs. 33-35. *Alvania macandrewi*, Madeira (BMNH 1911.10.22072, as "possible syntype of *Rissoa macandrewi* var. *spretta*"); 33, apertural view; 34, protoconch; 35, microsculpture bodywhorl.
 Figs. 36-38. *Alvania aurantiaca*, Madeira (BMNH 1983.16, paralectotype of *Rissoa aurantiaca* Watson); 36, apertural view; 37, protoconch and first postnuclear whorls; 38, microsculpture of bodywhorl.

R.G. Moolenbeek,
H.J. Hoenselaar,
Instituut voor Taxonomische Zoölogie,
(Zoölogisch Museum),
P.O. Box 4677,
1009 AT Amsterdam,
The Netherlands.

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